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THE CONQUEST OF CONTAGION

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In the conquest of contagion the first great victory was made in 1796 when Jenner discovered vaccination and so put the quietus on smallpox. With proper vaccination methods rigidly enforced, there is no more danger of it invading our midst now than there is of an attack from Mars. A second remarkable victory was made in 1890 when diphtheria antitoxin was made known. Its discovery was one of the most magnificent triumphs that medical research has ever accomplished and is the important measure today which serves to draw the venomous fangs and cripple the stealthy spread of a malady which from time immemorial has demanded an appalling sacrifice of life.

In the pre-antitoxin days, diphtheria angrily clutched the throat in an 85 or 90 per cent death-rate fashion. Since the antitoxin muzzle has been fitted to its jaws, its biting death-grip has sunk to 5 per cent or less and ought to be abolished entirely. It has been estimated that without antitoxin there would be in the United States over 64,000 deaths per year from diphtheria. By its use less than 15,000 actually occur. In our country alone this means an annual saving of 49,000 lives. If the laity could be educated to bring all sore throats, colds in the head and croups to the doctors; if all doctors could be educated, when such cases are presented to them, to use repeatedly if necessary proper culture methods, and if a city government could be educated to the necessity of furnishing more ample and better-paid medical school inspection, diphtheria could be practically abolished from any locality.

The third victory of considerable consequence was registered when vaccination against scarlet fever was instituted successfully. Observations in Russia, where the method was first extensively tried, proved its unquestioned value. Further observations by those who have used it in this country corroborate the Russian findings, so that now there is no excuse for not using or advising its use upon those who are exposed to scarlet fever. Its injection is safe and free from harm and produces no more systematic discomforts than do other vaccines. While the results obtained in preventing scarlatina by this means are not as successful as those obtained in diphtheria by antitoxin immunization, yet in our armamentarium along with typhoid and variola vaccines we must now place that of scarlet fever. It is pleasant to relate, therefore, that on account of this new agent the treacherous, lobster-colored exanthem which always lurks stealthily in our midst ready for a vicious attack has responded in a measure to health-taming processes and is now halter-broken to the extent that it takes its place in the municipal quarantine stable with the rest of the unruly animals, without so often kicking down its stall and escaping.

With the more accurate knowledge at hand of the seemingly hidden trails by which contagions march to their attack and with the armament of vaccines, antitoxins, and other defensive agents under command for repelling them, the optimist is liable to fly to extremes and maintain, as many do, that all communicable diseases could be completely abolished from the haunts of society if proper measures were vigorously pursued. But, unfortunately, so long as there is no race suicide in the ghettos and foreign quarters of our cities and so long as children go to school, I believe there will be contagious complaints. Youth and the mingling it brings during school days seems to increase susceptibility to infection more than to reading, 'riting and 'rithmetic.

Therefore, for these and other obvious reasons contagious disorders, to some extent at least, will probably always menace society, especially where humanity huddles itself into a city, despite all the clever refinements of preventive medicine and all the painstaking sanitary safeguards of public health. Consequently municipalities have wisely established special hospitals, organized boards of health and appointed official physicians to institute and supervise quarantine and sanitation. In each city pestilence is always present in the bud. Were it not for the watchfulness evinced and the resources provided by municipal health organizations for its prompt detection and management, it would blossom forth into wide-spread epidemics, which would stifle business, close schools and ultimately produce an alarming death-rate and economic loss. Therefore it behooves each city or municipality during a peaceful armistice, vigilantly to prepare its health-preserving equipment for war against the attacks of these easily-spreading diseases that a sudden invasion by them may be quickly and successfully repelled. Probably no public health establishment assists a municipality against such subtle foes better than does an appropriate, well-equipped and properly-conducted hospital; for it is there that extremely contagious cases can be conveyed, segregated and carefully quarantined. Without such a place they, perforce, would remain scattered foci of infection in hotels, lodging-houses and exposed quarters, thus spreading contagion rapidly and in far-reaching directions.

Perhaps along no other lines has the management of serious, contagious maladies like smallpox, diphtheria and scarlet fever been changed and improved more than in the evolution and development of the modern hospital for their confinement. The typical old-fashioned "pest house" is passing nowadays. Less than five years ago, except in a few isolated instances, one could officially visit municipality after municipality the country over and the only established institutionary accommodations found for contagious sicknesses, if any were luckily discovered for inspection at all, were usually forlorn, dingy, spook-like buildings, set in a sequestered, tangled wilderness as remote from human habitations as conditions would permit. To such "pest sanatoriums," persons unfortunate enough to fall victims to smallpox or other severe contagions were removed stealthily at night in any open, rattle-trap conveyance obtainable and were dumped gingerly and expeditiously into a small box of a room containing uncomfortable, dirty beds, often made up on the damp floor, there to lie and "fight out their fitful fever." Helplessly confined in such a filthy, unhygienic environment, re-breathing the atmosphere of their hideous, ill-ventilated pen, cared for by incompetent, untrained guards or so-called nurses, antiseptically intoxicated in the blissful belief that whisky would prevent the pest, some pulled through, many others died. No wonder people fought against being sent to a pest-house, dreading its discomforts and the ignominy attached to it more than they feared the disease with which they were afflicted; no wonder such places fell into worse repute as resorts for the sick than the opprobrious "poorhouse;" no wonder contagion flourished and epidemics prevailed when people, through fear of such infernos, were driven to keep secret their infectious afflictions.

Nor is this picture, this little keyhole glimpse of pest-houses which I have hastily given, overdrawn or exaggerated. Scores of similar ones or worse, exist today, scattered over the United States in the smaller cities, of which an examination or an incarceration within will serve to verify my statements; but they are disappearing slowly. In their stead up-to-date hospitals have been constructed or are being constructed by the larger cities and by some of the smaller ones also.

Of the latter, Syracuse probably out-distances all other sisters of her size and many, too, with a much larger population, in her hospital equipment for these diseases. Her citizens have become educated to appreciate the importance and to realize the value of the hospital and the useful rôle it fulfills. The hospital itself has been a powerful factor in giving this education to them. Several hundred patients go out from it each year with increased knowledge and interest concerning contagious conditions and their correct management. Their influence has been helpful throughout all sections of the city, especially in the poor and foreign quarters where ignorance, indifference and carelessness oftenest prevail and is making continuously easier, therefore, the difficult task of controlling and combating these maladies. Within this institution we care for those common everyday pests, diphtheria and scarlet fever. Smallpox also finds a refuge here whenever it occurs in Syracuse, as it occasionally does.

When one has come into intimate contact with a large number of scarlatina cases and has observed their glaring eruption, often mahogany-hued, it is not difficult to understand why the disease inducing it was originally christened scarlet fever. No other type of illness but this as boldly flaunts in deep crimson color the red signal of danger! No other type of illness but this as mockingly writes across its flaring surface beneath the tracery of the finger its dreaded name! Probably no other common contagion presents to the health officials for the purpose of baffling their skill so many puzzling varieties, so many atypical phases and complications—complications, too, which often overshadow or mask the treacherous and tricky disease inducing them as does this scarlet scamp. There are no Bertillon records at hand, as in diphtheria, whereby its bacterial rogues can be properly recognized by the germ sleuth and its identity be unquestionably diagnosed. Furthermore, this wily ailment, not satisfied with being complex and bizarre, struggles lazily along in an unhurried fashion over a period of several weeks. When it is not flirting coquettishly with some susceptible affinity like diphtheria, measles, whooping cough or chicken-pox, which perchance may be languishing in its neighborhood, it tries, as a matter of subtle pleasantry, some new sleight-of-hand trick by juggling forth a mysterious symptom or an obscure variation. Despite the most watchful chaperonage this disease has ever been a terror, for like Barkis "it is always willin'."

When scarlatina patients reach the hospital, cultures are taken at once from the nose and throat. This procedure detects diphtheria if it exists. It is found that five per cent of all scarlet-fever cases are inoculated with it, usually in a quiescent pharyngeal or nasal form. During the twelve hours this growth incubates, the patients are kept in a detention-room by themselves. This ounce of prevention has saved several pounds of diphtheria antitoxin. After a hot bath they are put to bed and kept there for three weeks; then if their condition permits they are allowed to get up, dress and even be out-of-doors in fair weather, so availing themselves of the restorative properties of fresh air and sunshine. Only a trifling amount of medication is indulged in except in the severely malignant types, and a liquid or semiliquid diet, with small, infrequent allowances of eggs and meat in the convalescent stage, is permitted. Enlargement of the lymphatic glands, "gatherings" of pus in the ears, acute inflammation of the kidneys, disturbances of the heart and pneumonia, those dangerous complications which, like storms, are prone to arise suddenly during the course of this illness, are watched for scrutinously and often are nipped in the bud successfully. When the disease has run its course and no vestige of peeling can be found on the epidermal layers of the skin, on the palms of the hands and the soles of the feet, where it tends to persist longest, their clothes are fumigated overnight, an antiseptic bath and shampoo given and the happy, germ-free individual is set at liberty to rejoin welcoming family and friends. This period of compulsory retreat from worldly pleasure averages six weeks.

Taking care of diphtheria is a different problem for it is a disease which, if not disarmed immediately, shoots to kill. Compared with typhoid fever the rapidity of its progress toward a fatality is as the speed of a twentieth century limited to that of a freight train. Many victims die of it before it is fully comprehended that they are dangerously sick. Procrastination in regard to diagnosis and treatment often means disaster. A physician, though he be equipped with all the technical knowledge there is pertaining to diphtheria, who is dilatory and careless in culture methods or who utilizes antitoxin in a faint-hearted fashion, will be brought face to face with the embarrassing necessity of filing a certificate with the Registrar of Vital Statistics unpleasantly often.

For eight years I have been in almost daily contact with diphtheria. At the City Hospital, where all types of it from mild to moribound are received, I have seen it, alas too often, in its most malignant forms. In some cases it has fiendishly attacked the larynx and choked its victim to a hideous death. In others it has spread its lethal membrane across the tissues of the throat and rapidly injected its toxic poison into the system, serpent-like, until paralysis of the heart ensued. Nevertheless, despite all the harrowing and unpleasant features which my recollection is able to visualize regarding this illness, if I were asked tonight which disease among the great list that "flesh is heir to" I, as a physician, would rather doctor, I would unhesitatingly answer diphtheria.

In the first place diphtheria is the one disease which has an infallible remedy for its prevention and cure, if used intelligently and immediately. Furthermore the diagnosis of it ordinarily is rendered easily and quickly by the bacteriologist, thus eliminating uncertainty and speculation. Of all the serious contagions it becomes the least contagious if proper preventive precautions are vigorously instituted. It is the safest infection to work about or nurse for it does not disseminate contagion in all directions as the sun gives off light or radium its energy, as the squeamish often fear and believe. If suitably treated with antitoxin early, the malady has few complications and recovery is speedy. Even neglected and aggravated cases are usually predominantly diphtheria rather than overshadowing mixtures of complicated affliction. If proper quarantine, culture methods and antitoxin dosage are prescribed there is no outbreak or epidemic of it in orphan asylums, schools, hospitals or homes that cannot be quickly and thoroughly overcome. Hence, when the ambulance delivers a patient at the hospital undergoing the direful onslaught of this malady, immediately, thereafter, a sufficient injection of serum is syringed under the skin. This process is repeated at intervals until temperature and pulse are normal and the disgusting membrane in the throat is entirely cleared out. A little medicine is administered but antitoxin is the antidote, the sheet-anchor held to. For laryngeal diphtheria, intubation tools or tracheotomy instruments, as the needs of a case may be, are always at hand to use in attempting immediate relief. Fortunately if a case be not too fulminating or has not been neglected too long, antitoxin forestalls the necessity for resorting to these serious alternatives. After about ten days, those who progress favorably are allowed up and out-of-doors. At the end of two weeks, cultures are made to determine if the diphtheria bacilli have decamped from the affected tissues. After two consecutive ones have been found free of these intruders, a patient is disinfected similarly to one who has recovered from scarlet fever and allowed to return home under the care of a physician.

Before an audience whose educational influence in health matters radiates so widely and helpfully among the homes and hospitals of this state, I cannot pass this point without expressing my carefully calculated valuation of antitoxin. In the last eight years I have given, or have had given under my direction, over two billion units of it. I have taken it myself in the dose I recommend for others. I have given it to infants a few days old, to the aged and infirm, to those suffering from complicating maladies or convalescing from serious surgical operations, to some where grave kidney diseases were rampant, to the pregnant woman, to individuals where diphtheria was a mistaken diagnosis and in innumerable instances to well persons for purposes of immunization, and never yet have I seen a dangerous symptom, a single serious after-effect or a fatality result from its intelligent use. I want emphatically to state here tonight that antitoxin, when I have used it wisely and in sufficient dosage, never has failed yet, if it has had a fair fighting chance, to show its inestimable value. As well try to convince a fireman that water won't put out a fire as to show me that antitoxin does not cure diphtheria.

Smallpox is cared for along the same lines as scarlatina or other eruptive skin affections, except that it is quarantined more strictly, if that be possible. Cleanliness, fresh air and sanitation make its discomforts less annoying, its contagion less virulent; while rest, careful feeding and attentive nursing modify its attack, so that after six weeks most sufferers leave less scarred than scared from their experience.

In enumerating and considering the means whereby victory has been won and is now maintained in the conquest of contagion, the work of the trained nurse is an asset of prime importance. On the smokeless firing line of pestilence, amid the unavoidable dangers which lurk in such an environment, she is always found, just as you find her today near the battlefields and in the military hospitals of stricken Europe, doing her duty in a quiet, unnoticed way without applause, while sacrificing most of the ordinary pleasures which afford other people happiness in a busy, workaday world. In the rôle of the visiting school nurse or at the bedside of the malignantly sick, where every breath and each task is carried on in an atmosphere filled with invisible, bacterial shrapnel, she is alert, resourceful, untiring in her efforts to counteract the inroads of disease. At any moment she may be attacked with diphtheria, scarlet fever or smallpox and becoming dangerously ill, as many have, even die as I have seen them do; yet never once have I known one to shrink or shirk in promptly giving skilful, tender care to any case, even the most malignantly infectious, whenever an emergency has summoned her to battle desperately for a life. Therefore tonight I esteem it a rare honor to have had this privilege of addressing these cursory remarks on contagion to so representative a body of trained and helpful women.

THE PUBLIC HEALTH NURSE IN INDUSTRY[1]

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In considering the problems which an industrial nurse has to face one must remember that the nurse in industry has a comparatively new field before her. Very little precedent has been established in this line of work. It is, therefore, necessary for the industrial nurse of the pres-

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[1] Read at a meeting of the Alumnae Association of the Rochester Homeopathic Hospital, August, 1914.